Understanding groundwater flow will help plans for Cottage Lake cleanup

How does groundwater affect Cottage Lake and surrounding streams? Two King County projects are looking at the interaction between surface water and groundwater in the Cold Creek aquifer, which appears to feed Cottage Lake. Results will help the county plan efforts to clean up Cottage Lake.

Cottage Lake is too rich in nutrients. The lake has seen large algae blooms in spring and fall since the early 1970s. Phosphorus is the limiting nutrient in the lake, i.e., most important for causing algae growth. A very small change in phosphorus in the lake can lead to a large growth in algae.

King County has a Centennial Clean Water grant to clean up the lake by reducing phosphorus. The first step is to understand where the phosphorus is coming from. If the phosphorus inflow can't be controlled, it won't be possible to reduce phosphorus in the lake.

King County also has a grant to study the inflow of groundwater to a network of streams (called "Cold Creek") in the vicinity of Cottage Lake. Under a King Conservation District grant, plus moneys from the Cities of Redmond and Woodinville, and with assistance from the Water Tenders organization, flow gages and thermistors are being installed in streams in several locations.

The study is looking at where the water comes into the streams, how much of the flow is surface water and how much is groundwater, and where the water is colder. The study's primary focus is to find out how to preserve cold water for salmon.

Cold water is important for salmon survival. Surface water is warmer than groundwater in summer when fish spawn. The study will examine various factors that may affect water flow and temperature, such as culverts, stream channels, septic systems, sanitary sewers, wetlands and lakes.

The study will also look at the direction that water flows underground. Researchers speculate that water may flow underground from a large area, including Lake Leota, into Cold Creek and Cottage Lake. Understanding water flow in both the streams and aquifers will help the county determine where cold water can be preserved.

The flow data, along with measurements by the Cottage Lake project, will help explain where the phosphorus in the lake is coming from. This will focus project activities on the streams contributing more phosphorus.

Once the phosphorus sources are better understood, the Cottage Lake program will explore a variety of means to clean up the lake. A mail survey is currently being conducted to find out what people think of the lake, what they think causes its problems, and possible actions to address the problems.

Survey results will be used to plan next steps. The three-year grant project includes:

- Education to residents near the lake and in the larger watershed, such as customized Natural Yard Care workshops on topics such as fertilization, septic systems and shoreline buffers. It could also include brochures and presentations on pet waste, car washing and other phosphorus sources.
- Restoration efforts, such as lakeside plantings and habitat improvements.
- Continued water quality monitoring.

The Cottage Lake program will be evaluated through monitoring of the lake and inlet creek for three years to see how the phosphorus level changes. A follow-up mail survey at the end of three years will also help measure success.

For more information about the Cottage Lake project, contact Beth Cullen at 206-263-6242 or beth.cullen@metrokc.gov. For more information about the Cold Creek aquifer study, contact Ken Johnson at 206-296-8323 or ken.johnson@metrokc.gov.

This article has been furnished by the Redmond-Bear Creek Groundwater Protection Committee.